



NOAA's National Climatic Data Center

User Engagement Fact Sheet

Sector: CONSTRUCTION

OVERVIEW

The construction industry is comprised of a wide range of businesses involved in engineering standards, building design, and the construction of various types of materials and structures. This sector is affected in many ways by climate change and variability as well as extreme weather events. Long-term climate impacts, such as sea-level rise, coastal erosion, and drought; and short-term weather-related impacts, such as high winds and flooding, influence the choice of site construction, building techniques, and materials. The potential risk of inclement weather and climate conditions can influence planning project completion timelines. A changing climate can lead contractors to build smarter structures that are more energy efficient and cost-effective. Facilities can be designed, built, operated, and regulated to withstand, manage, or harness the impacts of weather and climate. Having access to relevant and easily understandable weather and climate data is essential for strategic planning purposes, risk management, and assessing environmental footprints.

KEY STAKEHOLDERS

NOAA's National Climatic Data Center (NCDC) works with various groups, both as an information provider and as an applied research partner, to examine the effects of weather and climate on construction. This type of information can help engineers, builders, and decision makers within the construction sector make practical decisions in order to adapt to climate changes and variations and to mitigate possible effects. There are many different government and non-governmental organizations, and public and private groups and businesses that can benefit from using relevant climate and weather-related information. Some major groups include:

- Corporations that contribute in various ways to construction
- Professional societies and trade groups
- State natural resource and transportation departments
- City and county governments
- State environmental agencies
- Academia and other researchers

SECTOR NEEDS

Climate information is often available only as raw observations or in the form of tables, graphs, or written summaries, which may be difficult for users who are not well-versed in climate science to fully interpret. To bridge this gap, NCDC is partnering with groups within the industry to translate climate data into accessible, useful, and accurate products; and to leverage NCDC's climate expertise to better understand what the information means and how it can be used most effectively.

Climate information can be used in a variety of ways. Some examples include:

- Using precipitation data to design and build natural gas pipeline trenches that will withstand saturated ground conditions.
- Using temperature data to determine the optimal thermal characteristics of buildings for insulation purposes, and to determine heating, cooling, and ventilation requirements.
- Using precipitation data to develop erosion control procedures for construction projects.
- Using rainfall data to help determine optimal locations for building new outdoor sports arenas.

- Using past hurricane information and related meteorological data to help in the construction of residential and commercial buildings, including floating docks in coastal regions.
- Using historical rainfall data to plan ahead for “rain days”—days in which no outdoor work can be conducted due to precipitation events—during construction projects.
- Using ice thickness and freezing rain data for engineering design consideration in the construction of certain structures that are subject to outdoor weather.



NCDC DATA AND PRODUCTS

There are many different types of useful climate information available. Examples include:

- Surface observations made at thousands of locations across the globe for hourly, daily, and monthly averages.
- Summaries produced from data, such as temperature frequency distributions.
- *Climate Normals*, which are the average values of meteorological elements, such as temperature, precipitation, frost/freeze data, and snowfall data, over 30 years. The normal climate helps describe the climate and is used as a base to which current conditions can be compared.
- The *Air Freeze Index*, which is a measure of how much and how often air temperatures are above and below freezing during the winter, useful for determining if Frost-Protected Shallow Foundations (FPSF) should be utilized.
- Global tropical cyclone positions and intensities in the *International Best Track Archive for Climate Stewardship (IBTrACS)* tropical cyclone database.
- CD-ROM/DVDs, such as the *International Station Meteorological Climate Summary*, which contains climatic data summaries from thousands of weather stations around the world, and *Integrated Surface Data*, which contains climate information dating as far back as 1901 for about 10,000 weather stations.
- Publications, including *Local Climatological Data* (provides monthly average values), *Climatological Data* (provides monthly and annual average values), *Comparative Climatic Data* (provides average and extreme values), and *Storm Data* (provides monthly reports of damaging weather).



Collaboration between climate scientists and the construction community is essential in helping to build the necessary bridges that will transform climate science into information that is relevant and credible. Having NOAA membership on selected committees has proven to be an excellent way to improve communication and information use. Ongoing communication is important to ensure that the information that NCDC provides is appropriate and applicable to construction sector needs. As climate changes in the years ahead and the effects become more noticeable, new information needs will emerge. NCDC will work closely with this sector, attending trade meetings and sponsoring future workshops and conferences, in order to better understand, address, and anticipate these needs.

Additional details about available NOAA products and the economic benefits of these products are provided at:
<http://www.economics.noaa.gov>

For further information on obtaining climate services and products related to construction from NCDC please contact:

Customer Services Branch

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